0001

BOND AMOUNT COMPUTATION

Applicant: Hub Research & Development Co, Inc.

Permit Number: UTU 69857 **Permitted Acreage:** 3

Bonding Scheme (permit area, incremental, cumulative): _____

If Incremental:

Increment Number: _____

Increment Acreage: _____

If Cumulative:

Acres previously authorized for disturbance: 3

New acres proposed for disturbance: 0

Type of Operation: mine site (Reclamation)

Location: So. Emery - miller canyon

Prepared by: Sinbad Const. JD Wickman

Date: 2/8/10

Total Bond Amount: $ 9680.00

A-1

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DIV. OF OIL, GAS & MINING

0001

Project: Miller Rock Mine
Date: 2/18/10
Prepared by: Sinbad /. JDW

WORKSHEET 1
DESCRIPTION OF THE WORST-CASE RECLAMATION SCENARIO

The proposed reclamation estimates have been calculated and or projected based upon the assumption that no further reclamation would occure prior to the conclusion of site operations.

This reclamation estimate includes all portal closures, removal of surface structures as well as debris, machinery and all remaining mine related equipment, reclamation of all roads and trails as well as reclamation and reseeding of all disturbed areas for revegetation.

Assumptions:

No further disturbance accumulates or occures outside the current areas effected at present time.

Data Source(s):

Personal visit to site.

Project: Miller Rock Mine
Date: 2/8/10
Prepared by: ~~SJNBOD~~ / ODW

WORKSHEET 2
STRUCTURE DEMOLITION AND DISPOSAL COSTS

Structures to be demolished:

Item	Construction Material	Volume (cubic feet)	Unit Cost Basis ($)	Demolition Cost ($)
old cabin	wood	280	65.00 ph	1200.00
old mine equip.	metal	300	65 p hr	1200.00
old Hoppers	metal	300	65 p hr	1200.00
misc. Debris	metal-wood	200	65 phr	900.00
Subtotal				

Other items to be demolished (paved roads, conveyors, utility poles, rail spurs, etc.):

Subtotal = $ /

Debris Handling and Disposal Costs:

Subtotal = $ /

TOTAL DEMOLITION AND DISPOSAL = $ 4500.00

Data Source(s):

Project: Miller Rock Mine
Date: 2/8/10
Prepared by: Synbad / DPW

WORKSHEET 3
MATERIAL HANDLING PLAN SUMMARY

Earthmoving Activity	Volume (LCY)	Origin	Destination	Haul Distance (ft)	Grade * (%)	Equipment To Be Used
Mine Tailings	800	mine Portals	local	120'	1-2%	Backhoe

* Record grade resistance (% grade) here.

Project: _____
Date: _____
Prepared by: _____

WORKSHEET 4A
EARTHWORK QUANTITY

Cross-Section/ Station	Distance Between Stations (ft)	End Area (ft^2)	Volume (yd^3)*	Adjust-ment Factor * (%)	Adjusted Volume (LCY)
N/A					
TOTALS					

* See discussion of material volume estimates in Chapter 2, Step 2, Part II. B. of the Handbook. Select adjustment factor based on the state of the material to be moved.

Data Source(s):

A-5

04/05/00

04/05/00

Project: _____
Date: _____
Prepared by: _____

WORKSHEET 4B
EARTHWORK QUANTITY

Data Source(s):

N/A

Project: _____
Date: _____
Prepared by: _____

WORKSHEET 5
PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE

Earthmoving Activity:

Characterization of Dozer Used (type, size, etc.):

Description of Dozer Use (origin, destination, grade, haul distance, material, etc.):

Productivity Calculations:

Operating Adjustment Factor = _____ (operator factor) x _____ (material factor) x _____ (efficiency factor) x _____ (grade factor)

x _____ (weight correction factor) x _____ (production method/blade factor) x _____ (visibility factor) x _____ (elevation factor) = _____

Net Hourly Production = _____ (normal hourly production) LCY/hr x _____ (operating adjustment factor) = _____ LCY/hr

Hours Required = _____ (volume to be moved) LCY ÷ _____ (net hourly production) LCY/hr = _____ hr

Data Source(s):

N/A

Project: _____
Date: _____
Prepared by: _____

WORKSHEET 6
PRODUCTIVITY AND HOURS REQUIRED FOR DOZER USE–GRADING

Earthmoving Activity:

Characterization of Dozer Used (type, size, etc.):

Description of Dozer Use (% grade, effective blade width, operating speed, etc.):

Productivity Calculations:

Operating Adjustment Factor = _____ (operator factor) x _____ (material factor) x _____ (efficiency factor) x _____ (grade factor)

x _____ (weight correction factor) x _____ (production method/blade factor) x _____ (visibility factor) x _____ (elevation factor) = _____

Hourly Production = _____ (average speed) mi/hr x _____ (effective blade width) ft x 5,280 ft/mi x 1 ac/43,560 ft²

= _____ ac/hr

Net Hourly Production = _____ (hourly production) ac/hr x _____ (operating adjustment factor) = _____ ac/hr

Hours Required = _____ (area to be graded) ac ÷ _____ (net hourly production) ac/hr = _____ hr

Data Source(s):

N/A

Project: _____
Date: _____
Prepared by: _____

WORKSHEET 7
PRODUCTIVITY AND HOURS REQUIRED FOR RIPPER-EQUIPPED DOZER USE

Ripping Activity:

Characterization of Dozer and Ripper Use:

Description of Ripping (ripping depth, cut spacing, cut length, and material to be ripped):

Productivity Calculation:

Cycle Time = (_____ ft ÷ 88 ft/min) + _____ min = _____ min/pass
(cut length; [speed]; fixed turn time *)

Passes/Hour = 60 min/hr ÷ _____ min/pass X _____ = _____ passes/hr
(cycle time; efficiency factor)

Volume Cut/Pass = (_____ ft X _____ ft X _____ ft) ÷ 27 ft^3/yd^3
(tool penetration; cut spacing; cut length)

= _____ BCY/pass

Hourly Production = _____ BCY/pass X _____ passes/hr = _____ BCY/hr

Hours Required = _____ BCY ÷ _____ BCY/hr = _____ hr
(bank volume to be ripped **; hourly production)

* Fixed turn time depends upon dozer used. 0.25 min/turn is normal.

** Remember to use the swell factor to convert from bank cubic yards to loose cubic yards when applying these data to Worksheet 5. Calculate separate dozer hauling of ripped material for each lift on that worksheet.

Data Source(s):

N/A

Project: _____
Date: _____
Prepared by: _____

WORKSHEET 8
PRODUCTIVITY AND HOURS REQUIRED FOR LOADER USE

Earthmoving Activity:

Characterization of Loader Use (type, size, etc.):

Description of Loader Use (origin, destination, grade, haul distance, etc.):

Productivity Calculations:

Cycle time = _____ (haul time (loaded)) min + _____ (return time (empty)) min + _____ (basic cycle time) min = _____ min

Net Bucket Capacity = _____ (heaped bucket capacity) LCY x _____ (bucket fill factor *) = _____ LCY

Hourly Production = _____ (net bucket capacity) LCY ÷ _____ (cycle time) min x _____ (efficiency factor) x 60 min/hr = _____ LCY/hr

Hours Required = _____ (volume to be moved) LCY ÷ _____ (hourly production) LCY/hr = _____ hr

* See loader section of equipment manual.

Data Source(s):

N/A

Project: _____
Date: _____
Prepared by: _____

WORKSHEET 9
PRODUCTIVITY AND HOURS REQUIRED FOR TRUCK USE

Earthmoving Activity:

Characterization of Truck Use (type, size, etc.):

Description of Truck Use (origin, destination, grade, haul distance, capacity, etc.):

Productivity Calculations:

No. Loader Passes/Truck = _____ (truck capacity *) LCY ÷ _____ (loader bucket net capacity) LCY = _____ (round down to nearest whole number) passes

Net Truck Capacity = _____ (loader bucket net capacity) LCY x _____ (no. loader passes/truck) = _____ LCY

Loading Time/Truck = _____ (loader cycle time (from *Worksheet 8* or *10*)) min x _____ (no. loader passes/truck) = _____ min

Truck Cycle Time = _____ (haul time) min + _____ (return time) min + _____ (loading time) min + _____ (dump and maneuver time) min = _____ min

No. Trucks Required = _____ (truck cycle time) min ÷ _____ (total loading time) min = _____ trucks

Production Rate = _____ (net truck capacity) LCY x _____ (no. trucks) ÷ _____ (truck cycle time) min = _____ LCY/min

Hourly Production = _____ (production rate) LCY/min x 60 min/hr x _____ (efficiency factor) = _____ LCY/hr

Hours Required = _____ (volume to be moved) LCY ÷ _____ (hourly production) LCY/hr = _____ hr

* Use the average of the struck and heaped capacities.

Data Source(s):

Project: Miller Rock
Date: 2/18/10
Prepared by: Sinbad / JDW

WORKSHEET 10
PRODUCTIVITY FOR HYDRAULIC EXCAVATOR USE (BACKHOE OR POWER SHOVEL)

Earthmoving Activities:

Characterization of the Excavator Used (type, size, etc.):

Description of Excavator Used (loading geometry, materials, etc.):

Productivity Calculations:

Net Bucket Capacity = 1.25 (heaped bucket capacity) LCY x 1.0 (bucket fill factor *) = 1.0 LCY

Hourly Production = 1.0 (net bucket capacity) LCY x 60 min/hr ÷ 60 (cycle time **) min x 120 (efficiency factor) = 120 LCY/hr

Hours Required = 20 (volume to be handled) LCY ÷ 120 (net hourly production) LCY/hr = 20 hr

* See loader section of the equipment manual.
** See excavator section of equipment manual.

Data Source(s):

N/A

Project: _____
Date: _____
Prepared by: _____

WORKSHEET 11A
PRODUCTIVITY OF PUSH-PULL OR SELF-LOADING SCRAPER USE

Earthmoving Activity:

Characterization of Scraper Used (type, capacity, etc.):

Description of Scraper Use (origin, destination, grade, haul distance, capacity, etc.):

Productivity Calculations:

Cycle Time = _____ min (load time (push-pull is per pair)) + _____ min (loaded trip time) + _____ min (maneuver and spread time) + _____ min (return trip time) = _____ min (push-pull is per pair)

Hourly Production = _____ LCY (capacity *) X 60 min/hr ÷ _____ min (cycle time) X _____ (efficiency factor) = _____ LCY/hr (push-pull is per pair)

Hours Required = _____ LCY (volume to be handled) ÷ _____ LCY/hr (net hourly production) = _____ hr

* The average of the struck and heaped capacities; use total for two scrapers for push-pull.

Data Source(s):

N/A

Project: _____
Date: _____
Prepared by: _____

WORKSHEET 11B
PRODUCTIVITY OF DOZER PUSH-LOADED SCRAPER USE

Earthmoving Activity:

Characterization of Scraper Used (type, capacity, etc.):

Description of Scraper Use (origin, destination, grade, haul distance, capacity, etc.):

List Pusher Tractor(s) Used:

Describe Push Tractor Loading Method (see figure on next page):

Scraper Productivity Calculations:

Cycle Time = _____ (load time) min + _____ (loaded trip time) min + _____ (maneuver and spread time) min + _____ (return trip time) min = _____ min

Hourly Production = _____ (capacity *) LCY x 60 min/hr ÷ _____ (cycle time) min x _____ (efficiency factor) = _____ LCY/hr

Hours Required = _____ (volume to be handled) LCY ÷ _____ (hourly production) LCY/hr = _____ hr

* Use the average of the struck and heaped capacities.

Push Tractor Productivity Calculations:

Pusher Cycle Time = _____ (scraper load time) min x _____ (pusher factor) = _____ min

Scrapers/Pusher = _____ (scraper cycle time) min ÷ _____ (pusher cycle time) min = _____ scrapers

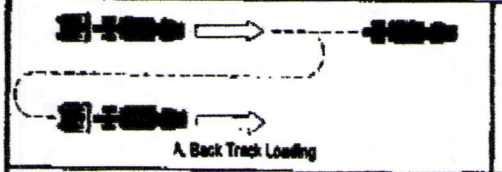
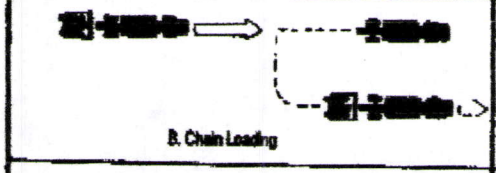
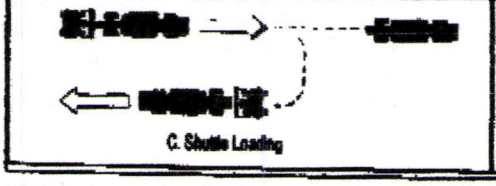
Pusher Hours Required = _____ (scraper hours) hr ÷ _____ (scrapers per pusher) = _____ (round up) hr

Data Source(s):

N/A

Project: _____
Date: _____
Prepared by: _____

WORKSHEET 11B (continued)
PRODUCTIVITY OF DOZER PUSH-LOADED SCRAPER USE

PUSHER FACTORS	Single Push	Tandem Push
 A. Back Track Loading	1.5	2.0
 B. Chain Loading	1.3	1.5
 C. Shuttle Loading	1.3	1.6

Modified from Terex, 1981.

The following disclaimer pertains to the above illustration from Terex, "Production and Cost Estimating of Material Movement and Earthmoving Equipment."

This manual is a fundamental text on estimating the production and cost of moving materials. It is intended for people associated with the construction industry who prepare job estimates or who evaluate the performance of earthmoving equipment and related costs.

The manual can be used as a supplementary text in those schools and colleges offering formal training in earthmoving techniques. A metric version of this manual is also available.

It will also serve as a reference for those professional consulting engineers who prepare complete job analyses, of which the earthmoving fundamentals covered in this text are only one element.

Estimating the production and costs of earthmoving equipment is not an exact science. While this manual outlines the basic factors or parameters on which estimates can be made, the user must make judgements, and must apply his own experience and know-how to temper the estimate.

This manual, prepared by TEREX, deals with rubber-tired and track-laying equipment, and does not attempt to deal with other forms of earthmoving or production. While the formulas and other guides in this manual are entirely satisfactory for most earthmoving jobs, the reader should note that more sophisticated haulage analyses can be quickly accomplished through the use of a computer.

While efforts have been made to utilize percentages, formulas, and other notations in this manual which reflect actual on-the-job conditions, none of the statements in this manual, or the illustrative figures given for machine life, or the costs for owning and operating earthmoving equipment, or the production of such earthmoving equipment should be construed as any form of guarantee that these machines will have any such specific service life, or production capabilities, or that costs related to their ownership and operation will be as indicated.

Data Source(s): TEREX AMERICAS, Tulsa, OK 74107, (918) 448-5802.

Project: Miller Rock Mine
Date: 2/9/10
Prepared by: Sinbad / JDW

WORKSHEET 12
PRODUCTIVITY AND HOURS REQUIRED FOR MOTORGRADER USE

Earthmoving Activity:

Characterization of Grader Used (type, size capacity, etc.):

Description of Grader Route (push distance, grade, effective blade width, operating speed, etc.):

Productivity Calculations:

Grading

Hourly Production = 2 mph (average speed) mi/hr x 12 Ft wide (effective blade width) ft x 5,280 ft/mi x 1 ac/43,560 ft²

x _____ (efficiency factor) = _____ ac/hr

Hours Required = 3 (area to be graded) ac + .38 (hourly production) ac/hr = 8hr hr

Scarification

~~0~~

Hourly Production = _____ (average speed) mi/hr x _____ (scarifier width) ft x 5,280 ft/mi x 1 ac/43,560 ft²

x _____ (efficiency factor) = _____ ac/hr

Hours Required = _____ (area to be scarified) ac + _____ (hourly production) ac/hr = _____ hr

Total Hours Required

Total Hours = 8 (grading hours required) + ~~0~~ (scarification hours required) = 8 hr

Data Source(s):

Posted experience

Project: Miller Rock Mine
Date: 2/2/10
Prepared by: Sinbad / JDW

WORKSHEET 13
SUMMARY CALCULATION OF EARTHMOVING COSTS

Equipment *	Ownership & Operation Cost ($/hr)	Labor Cost ($/hr)	Total Hours Required **	Total Cost *** ($)
D7 G Cat Dozer	$160.00	$40.00		
LS 2700 Linkbelt excavator	$65.00	$45.00		
772 BH Grader	$40.00	$40.00		
		Grand Total		

* Include all necessary attachments and accessories for each item of equipment. Also, add support equipment such as water wagons and graders to match total project time as appropriate.

** Account for multiple units in truck and/or scraper teams.

*** To compute Total Cost: Add Ownership & Operation Cost and Labor Cost columns then multiply by Total Hours Required column.

Data Source(s):

Project: Miller Rock Mine
Date: 2/5/10
Prepared by: ~~Symbad / JDiv~~

WORKSHEET 14
REVEGETATION COSTS

Name and Description of Area To Be Revegetated:
Brett Clark. miller canyon mine

Description of Revegetation Activities:
smooth and broadcast seed on Aprox- 3 acre of Disturbed Area

Cost Calculation for Individual Revegetation Activities:

Initial Seeding

3 ac (area to be seeded) x ($ 750.00 /ac seedbed preparation + $ 280.00 /ac seeding, fertilizing & mulching) = $ 1030.00

Planting Trees and Shrubs

_____ ac (area to be planted) x ($ _____ /ac planting + $ _____ /ac herbicide treatment) = $ _____

Reseeding

_____ ac (area to be seeded & unreleased disturbed areas) x _____ (failure rate*) x ($ _____ /ac seedbed preparation + $ _____ /ac seeding, fertilizing & mulching) = $ _____

Replanting Trees and Shrubs

_____ ac (area to be planted & unreleased disturbed areas) x _____ (failure rate*) x ($ _____ /ac planting + $ _____ /ac herbicide treatment) = $ _____

Other Necessary Revegetation Activities

(Examples of other activities that may be necessary include soil sampling, irrigation, and rill and gully repair. Describe each activity and provide a cost estimate with documentation. Use additional worksheets if necessary.)

Other Costs = $ ~~0~~

TOTAL REVEGETATION COST = $ 1030.00

* Identify failure rate and basis. If anticipated failure rates vary within the area proposed for disturbance, use a separate worksheet for the area subject to each failure rate.

Data Source(s):

Project: _____
Date: _____
Prepared by: _____

WORKSHEET 16
OTHER RECLAMATION ACTIVITY COSTS

(Subsidence damage repair costs, water supply replacement costs, funds required to support long-term treatment of unanticipated acid or ferruginous mine drainage, etc.)

Description of Reclamation, Repair or Pollution Abatement Activity:

Assumptions: N/A

Cost Estimate Calculations:

TOTAL COSTS = $_____

Other Documentation or Notes:

(Include additional sheets, maps, calculations, etc., as necessary to document estimate.)

Data Source(s):